Clinical encounters of Australian general practice registrars with Aboriginal and Torres Strait Islander patients

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Abstract

Objective: General practice is central to Aboriginal and Torres Strait Islander health care, and this area is a core element of Australian general practice (GP) training. We aimed to describe the prevalence, nature and associations of GP registrar encounters with Aboriginal and Torres Strait Islander patients.

Methods: A cross-sectional analysis from a cohort study of GP registrars' clinical consultations 2010–2013. Registrars record demographic, clinical and educational details of consecutive patient encounters. Multivariable associations were tested with logistic regression.

Results: A total of 592 registrars contributed data from 69,188 consultations. Encounters with Aboriginal and Torres Strait Islander patients comprised 1.0% of consultations. Significant positive associations included younger patient age; new patient to the registrar; lower socioeconomic status of practice location; non-urban practice setting; more problems managed; and follow-up arranged. A greater proportion of Aboriginal and Torres Strait Islander patients' problems were psychological/social and a lesser proportion were cardiovascular. Consultation duration did not differ between the two groups

Conclusions: GP registrars encounter Aboriginal and Torres Strait Islander patients less than do established GPs. Our results suggest possible variability in registrar experience of Aboriginal and Torres Strait Islander health.

Implications: Our findings will inform training of a culturally and clinically competent workforce in this area.

Key words: health services, Indigenous, family practice, general practice

Aboriginal and Torres Strait Islander people have the worst health of any identifiable group in Australia. Substantial health inequalities exist between Aboriginal and Torres Strait Islander and non-Aboriginal and Torres Strait Islander Australians, particularly in relation to rates of chronic diseases such as renal disease, cardiovascular disease, diabetes and mental health.[1] These health discrepancies have contributed to the Council of Australian Governments' (COAG) commitment to 'Close the Gap'.[2] One of the key objectives of the National Partnership agreement in Aboriginal and Torres Strait Islander health outcomes is "to ensure access by Aboriginal and Torres Strait Islander people to comprehensive and co-ordinated health care, provided by a culturally competent health workforce…".[3]

In 2013, Aboriginal and Torres Strait Islander patients accounted for about 1.5% of consultations in Australian general practice.[4] While Aboriginal Community Controlled Health Services (ACCHSs) have been established to provide care for Aboriginal and Torres Strait Islander people, about 50–60% of Aboriginal and Torres Strait Islander patients access health care outside these organisations.[5] 'Closing the Gap' requires the training of a workforce of health practitioners to meet the needs of Aboriginal patients in both community controlled and mainstream general practices.

Consulting with patients is the core learning activity of general practice training in Australia. Registrars (trainees) learn by the 'apprenticeship model', seeing patients as independent practitioners in the general practice setting under the overall supervision of accredited GP supervisors (trainers). Training in Aboriginal and Torres Strait Islander health is a core component of the Australian General Practice Training (AGPT) program, reflected in the curricula of both

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the Royal Australian College of General Practitioners (RACGP)[6] and the Australian College of Rural and Remote Medicine (ACRRM).[7] In Aboriginal and Torres Strait Islander health, as with other aspects of general practice training, consulting with patients provides registrars with the opportunity to apply knowledge, skills and attitudes learnt in training workshops. The nature of these consultations is also vital to a better understanding of Aboriginal and Torres Strait Islander community health needs.

There is no literature describing the consultations of GP registrars with Aboriginal and Torres Strait Islander patients. We aimed to describe the rate and nature of Aboriginal and Torres Strait Islander patient consultations with GP registrars in the mainstream general practice setting, and to describe the associations of these encounters. In doing so, we aimed to examine the ways in which the content of consultations and actions arising from consultations involving Aboriginal and Torres Strait Islander patients differ from other consultations.

Methods

Participants

This was a cross-sectional analysis of data from the Registrar Clinical Encounters in Training (ReCEnT) cohort study. The study methodology has been described in detail elsewhere.[8] Briefly, ReCEnT is an ongoing cohort study of GP registrars' in-practice clinical experiences undertaken in four general practice regional training providers (RTPs). These encompass urban, rural, remote and very remote practices in four Australian states. Registrars practising in ACCHSs were not included in the study.

The AGPT program currently involves a three-year, full-time equivalent commitment with a minimum of three 6-month terms in the general practice setting.

Data Collection

In ReCEnT, participating registrar characteristics and the characteristics of their training practice are documented. Registrars also record the details of 60 consecutive patient consultations on a paper-based encounter form completed at the end of the consultation during each six-month training term. Sixty consultations represents about one week of consultations. Data collection is conducted around the mid-point of the term.

The analyses in this study used data from eight collection periods for the period 2010–2013.

Outcome factor

The outcome factor was whether the patient was Aboriginal or Torres Strait Islander. To identify Indigenous status, registrars were asked to use the clinical record or, if this was incomplete, to ask the patient: "Do you identify as Aboriginal or Torres Strait Islander?"

Independent variables

Other variables in this analysis relate to the registrar, patient, practice and the consultation.

Registrar factors were: age; gender; training term; training pathway enrolled in (general or rural: rural pathway registrars train exclusively in rural locations); place of medical qualification (Australia or international); and full-time/part-time status.

Patient factors were: age; gender; new patient to the practice; and new patient to the registrar.

Practice factors included: rurality; socioeconomic status (SES) of the practice location; practice size (number of GPs); and if the practice routinely bulk-bills (i.e. there is no financial cost to the patient for the consultation). Practice postcode was used to define the Australian Standard Geographical Classification-Remoteness Area (ASGC-RA) classification[9] (the degree of rurality) and the Socioeconomic Index for Areas (SEIFA) Index of Disadvantage[10] of the practice location.

Consultation factors were: duration of consultation; problems managed; whether pathology was ordered; and whether a specialist referral was made. Educational consultation factors included whether the registrar sought clinical information or assistance during the consultation (from their supervisor, from a specialist, or from electronic or hard-copy resources).

Problems managed/diagnoses were coded according to the International Classification of Primary Care, second edition classification system (ICPC-2).[11] Individual diseases/problems are categorised in ICPC-2 to 17 systems-based chapters (cardiovascular, psychological etc.). Chronic diseases were coded via an existing classification system derived from ICPC-2 PLUS.[12]

To test associations of a consultation involving an Aboriginal or Torres Strait Islander patient, simple and multiple logistic regression were used within a generalised estimating equations (GEE) framework to account for clustering of patients within registrars. All variables with a p value less than 0.2 in the univariate analysis were included in the multiple regression models.

Three statistical models were built, each with 'Aboriginal or Torres Strait Islander patient' as the dependent variable:

1. To examine a registrar's consultations involving Aboriginal or Torres Strait Islander patients, patient, practice and registrar independent variables were entered in the regression model.
2. To examine ways the content of consultations involving Aboriginal or Torres Strait Islander patients differed from other consultations, the above variables were entered in a model along with consultation duration, sources of clinical assistance accessed by the registrar during the consultation, whether a practice nurse was involved in the consultation, and the number of problems dealt with in the consultation.
3. To examine whether actions arising from consultations involving Aboriginal or Torres Strait Islander patients differed from those arising from other consultations, all variables in the previous two models were entered in a new model along with learning goals generated by the registrar, specialist referrals made, number of pathology and radiology tests ordered, and medications prescribed.

The rationale for the building of the three models was that whether an Aboriginal or Torres Strait Islander patient presents for a consultation will plausibly be influenced by patient, registrar and practice factors, but evaluation of these influences may be compromised by inclusion in the model of factors operating once the consultation is progressing. Similarly, evaluation of the content of the consultation may be compromised by the inclusion in this model of actions arising from the consultation. For example, referrals were included as an action arising from the consultation in the third model. Inclusion of referrals in the first model is not relevant to whether or not a registrar sees a patient and inclusion of this variable will distort the odds ratio for the relevant included variables.

Differences between Aboriginal and Torres Strait Islander and non-Aboriginal and Torres Strait Islander patients in proportions of diagnoses/problems classified as individual ICPC-2Plus Chapter were assessed with Chi-square tests, adjusted for clustering of patients within registrars.

Statistical analyses used SAS v9.3. Predictors were considered statistically significant if the p-value was <0.05.

Ethics approval

The ReCEnT project has approval from the University of Newcastle Human Research Ethics Committee, Reference H-2009-0323.

Results

Demographics of registrars, patients and practices

A total of 592 individual registrars (response rate 93.4%) contributed data to the analysis. Overall, 65.9% (95%CI 62.0-69.7) of the registrars were female, with a mean age of 32.8 years (SD 6.8). Registrars who undertook their primary medical degree in Australia comprised 74.8% (95%CI 71.3-78.3) of registrars. The 592 registrars contributed data from 1,167 registrar-terms, relating to 69,188 consultations. Characteristics of participating registrars, practices and registrar-terms are displayed in Table 1.

Consultations with Aboriginal and Torres Strait Islander patients comprised 1.0% (n=673) of all encounters. The mean age of Aboriginal and Torres Strait Islander patients was 31.4 years (SD 21.1), and 63.5% (95%CI 59.8-67.2) were female. Of the patients, 609 (0.88%) were Aboriginal, 31 (0.04%) were Torres Strait Islander and 33 (0.05%) identified as both.

Associations of a GP registrar consulting with an Aboriginal and Torres Strait Islander patient

The associations of seeing an Aboriginal and Torres Strait Islander patient are presented in Table 2. The multivariate analyses are presented in Table 3.

Consultations being with Aboriginal and Torres Strait Islander patients were significantly associated in the adjusted model with the registrar being in their last term of training (OR 2.09, p=0.007, referent Term 1), younger patient age (OR 0.29, p<0.001 for 55+yrs vs 0-14yrs) and the patient having consulted with the registrar previously (OR 0.74, p=0.003, referent existing patient).

Practice-level associations of a consultation being with an Aboriginal and Torres Strait Islander patient were lower SES (decile) of the practice location (OR 0.84, p<0.001); and outer regional, remote or very remote classification of the practice location(OR 2.05, p=.003, referent Major City).

More problems were addressed in consultations with Aboriginal and Torres Strait Islander patients (OR 1.2, p=0.010). There was, though, no significant increase in duration of consultation. As well as Aboriginal and Torres Strait Islander patients being more likely to have been seen by the registrar prior to the index consultation, follow-up was more often arranged for Aboriginal and Torres Strait Islander than non-Aboriginal and Torres Strait Islander patients (OR 1.3, p=0.012). Chronic disease, however, was not dealt with significantly more often in Aboriginal and Torres Strait Islander patients, nor was there an association with registrars seeking more information/help during consultations with Aboriginal and Torres Strait Islander patients.

Problems Managed

The most common systems managed overall were general and unspecified (14.5%), respiratory (12.2%), psychological (11.0%) and musculoskeletal (9.4%). Compared with consultations with non-Aboriginal and Torres Strait Islander patients, psychological and social problems were more often managed, and cardiovascular problems less often managed, as a proportion of all problems. Problems managed by ICPC-2 disease chapters for non-Aboriginal and Torres Strait Islander patients compared to those with Aboriginal and Torres Strait Islander patients are presented in Supplementary Files 1 and 2, available with the online version of this article.

Conclusions

Comparison with other literature and interpretation of findings

Compared to established Australian GPs, registrars encounter fewer Aboriginal and Torres Strait Islander patients (1.0 versus 1.5 per 100 encounters).[4] However, as our data does not include consultations in ACCHSs, the data are not directly comparable. Both registrar and established GP rates are substantially lower than the proportion of Aboriginal and Torres Strait Islander patients in the population (3.0%).[13] Issues of access of Aboriginal and Torres Strait Islander patients to mainstream general practice have previously been described, and are likely to have influenced our results.[14] Lower consultation rates may also reflect lack of identification of Aboriginal and Torres Strait Islander status, which has been described in Australian general practice.[15] However, we anticipate our methodology to have minimised this bias by having registrars directly elicit Aboriginal and Torres Strait Islander status at the consultation.

Table 1: Participating registrar, registrar-term and practice characteristics.

Variable	Class	n % (95% CIs) or Mean (SD)
Registrar variables (n=592)		
Registrar gender	Male	202 (34.1) [30.3-38.0]
	Female	390 (65.9) [62.0-69.7]
Pathway registrar enrolled in	General	453 (76.7) [73.2-80.1]
	Rural	138 (23.4) [19.9-26.8]
Qualified as a doctor in Australia	No	149 (25.2) [21.7-28.7]
	Yes	443 (74.8) [71.3-78.3]
Registrar age (years)	Mean (SD)	32.9 (6.8)
Registrar year of graduation	Mean (SD)	2004.9 (5.7)
Registrar-term or practice-term variables (n=1167)		
Registrar Training Term	Term 1	515 (44.1) [41.3-47.0]
	Term 2	328 (28.1) [25.5-30.7]
	Term 3	266 (22.8) [20.4-25.2]
	Term 4	58 (5.0) [3.7-6.2]
Registrar works fulltime	No	259 (22.7) [20.3-25.1]
	Yes	882 (77.3) [74.9-79.7]
Does the practice routinely bulk bill	No	983 (84.2) [82.1-86.3]
	Yes	184 (15.8) [13.7-17.9]
Number of GPs working at the practice	1-5	375 (32.8) [30.1-35.5]
	≥6	769 (67.2) [64.5-69.9]
Rurality of practice	Major City	674 (57.8) [55.0-60.6]
	Inner Regional	348 (29.8) [27.2-32.5]
	Outer regional/Remote/Very Remote	144 (12.3) [10.5-14.2]
SEIFA* Index (decile) of practice	Mean (SD)	5.6 (2.9)

Socioeconomic Index for Area (SEIFA) Relative Index of Disadvantage

Table 2: Characteristics associated with consultation being with an Aboriginal and Torres Strait Islander (n=69,188).

Variable	Class	Aboriginal and Torres Strait Islander		
		No (n=65167)	Yes (n=673)	*P*
Patient age group	0-14	10,946 (17%)	159 (24%)	<0.0001
	15-30	12,593 (20%)	192 (29%)	
	31-54	21,754 (34%)	222 (33%)	
	55+	18,892 (29%)	95 (14%)	
Patient gender	Male	24,584 (39%)	238 (36%)	0.2467
	Female	39,092 (61%)	421 (64%)	
NESB	No	61,434 (94%)	641 (96%)	0.0547
	Yes	3,700 (5.7%)	25 (3.8%)	
Patient/practice status	Existing Patient	27,558 (42%)	321 (48%)	<0.0001
	New to Registrar	33,180 (51%)	282 (42%)	
	New to Practice	4,429 (6.8%)	70 (10%)	
Registrar gender	Male	22,149 (34%)	284 (42%)	0.0350
	Female	43,018 (66%)	389 (58%)	
Registrar fulltime or part time	Part-time	14,206 (22%)	124 (19%)	0.1944
	Full-time	49,577 (78%)	543 (81%)	
Training term/post	Term 1	28,816 (44%)	280 (42%)	0.1604
	Term 2	18,112 (28%)	176 (26%)	
	Term 3	14,923 (23%)	163 (24%)	
	Term 4	3,316 (5.1%)	54 (8.0%)	
Worked at the practice previously	No	48,223 (75%)	466 (70%)	0.0988
	Yes	16,045 (25%)	198 (30%)	
Qualified as a doctor inAustralia	No	16,165 (25%)	198 (30%)	0.2292
	Yes	47,817 (75%)	464 (70%)	
Practice size	Small	20,796 (33%)	280 (42%)	0.0149
	Large	43,126 (67%)	387 (58%)	
Does the practice routinely bulk bill	No	54,344 (84%)	508 (76%)	0.0139
	Yes	10,153 (16%)	163 (24%)	
Rurality	Major City	37,834 (58%)	291 (43%)	<0.0001
	Inner Regional	19,313 (30%)	200 (30%)	
	Outer Regional/ Remote/Very remote	7,960 (12%)	182 (27%)	
Sought help from any source	No	51,682 (79%)	515 (77%)	0.1922
	Yes	13,485 (21%)	158 (23%)	
Medication prescribed	No	26,382 (40%)	240 (36%)	0.0093
	Yes	38,785 (60%)	433 (64%)	
Chronic problem	No	46,766 (72%)	458 (68%)	0.0382
	Yes	18,401 (28%)	215 (32%)	
Referral ordered	No	54,295 (83%)	540 (80%)	0.0437
	Yes	10,872 (17%)	133 (20%)	
Imaging was ordered	No	57,630 (88%)	601 (89%)	0.4731
	Yes	7,537 (12%)	72 (11%)	
Pathology was ordered	No	49,889 (77%)	509 (76%)	0.6232
	Yes	15,278 (23%)	164 (24%)	
Learning goals	No	50,329 (79%)	463 (72%)	0.0084
	Yes	13,491 (21%)	178 (28%)	
Follow-up ordered	No	28,185 (43%)	234 (35%)	0.0002
	Yes	36,982 (57%)	439 (65%)	
Registrar age	mean (SD)	33 (7)	34 (7)	0.0420
SEIFA* Index (decile)	mean (SD)	6 (3)	4 (3)	<0.0001
Consultation duration	mean (SD)	17 (9)	18 (10)	0.0981
Number of problems	mean (SD)	2 (1)	2 (1)	0.0146

**Socioeconomic Index for Area (SEIFA) Relative Index of Disadvantage*

Aboriginal and Torres Strait Islander patients seen by registrars were significantly younger than non-Aboriginal and Torres Strait Islander patients (31.4 compared to 40.3 years). This reflects, in part, the age distribution of the Aboriginal and Torres Strait Islander population.[13] Furthermore, the mean age of Aboriginal and Torres Strait Islander patients consulting with registrars, compared to that of Aboriginal and Torres Strait Islander patients in the practices of established GPs in previous studies, was lower (31.4 compared to 36 years). We have previously shown that registrars see younger patients than established GPs.[16]

Consultations with Aboriginal and Torres Strait Islander patients were associated with outer regional, remote or very remote practice location, as well as the practice location having lower SES. This is consistent with the high proportion of Aboriginal and Torres Strait Islander people living in rural and remote areas,[13] and the relative socioeconomic disadvantage of Australia's Aboriginal and Torres Strait Islander population.[17] However, as most Aboriginal and Torres Strait Islander people live in inner regional or urban areas (with 34.8% living in capital cities),[13] the need for a culturally competent health workforce is just as important in larger population centres.

Given the burden of illness in Aboriginal and Torres Strait Islander populations, it might be expected that consultations with Aboriginal and Torres Strait Islander patients would be more complex or demanding than those with non-Aboriginal and Torres Strait Islander patients. There were significantly more problems managed in consultations involving Aboriginal and Torres Strait Islander patients, consistent with findings from established GPs and consultations in the AMS setting.[18] However, the increased duration of consultations was not statistically significant (in univariate or adjusted analyses). Also, despite the high prevalence of chronic disease in Aboriginal and Torres Strait Islander populations,[1] we did not find significant evidence that registrars were managing more chronic disease in these patients. In comparison, though, established GPs are *less* likely to manage chronic disease in Aboriginal and Torres Strait Islander people than in non-Aboriginal and Torres Strait Islander patients.[19]

While management of chronic diseases by registrars was not significantly associated with Indigenous status, an aspect of general practice often related to chronic disease

Table 3: Simple and multiple logistic regression with outcome factor 'patient being Aboriginal or Torres Strait Islander'.

Variable	Class	Univariate		Adjusted	
		OR (95% CI)	*P*	OR (95% CI)	*P*
Associations of patients' Aboriginal and Torres Strait Islander status (registrar, patient and practice factors)					
Training term/post	Term 2	1.00 (0.76–1.32)	0.9997	1.02 (0.75–1.38)	0.9178
Referent: Term1	Term 3	1.12 (0.83–1.52)	0.4519	1.27 (0.91–1.77)	0.1670
	Term 4	1.68 (1.06–2.65)	0.0276	2.09 (1.23–3.57)	0.0065
Patient/practice status	New to Practice	1.36 (1.02–1.81)	0.0362	1.27 (0.95–1.70)	0.1026
Referent: Existing patient	New to Registrar	0.73 (0.61–0.87)	0.0006	0.74 (0.61–0.90)	0.0026
Worked at the practice previously	Yes	1.28 (0.96–1.71)	0.0988	0.92 (0.68–1.25)	0.5980
Does practice routinely bulk bill	Yes	1.72 (1.12–2.64)	0.0139	1.33 (0.88–2.00)	0.1697
Rurality	Inner Regional	1.35 (0.99–1.83)	0.0576	1.27 (0.89–1.81)	0.1816
Referent: major city	Outer Regional/ Remote/Very remote	2.97 (1.97–4.48)	<0.0001	2.05 (1.28–3.27)	0.0028
SEIFA Index (decile)		0.82 (0.78–0.87)	<0.0001	0.84 (0.80–0.89)	<0.0001
Registrar gender	Female	0.71 (0.51–0.98)	0.0350	0.76 (0.54–1.06)	0.1051
Registrar works	Part-time	0.80 (0.57–1.12)	0.1944	0.85 (0.61–1.17)	0.3050
Practice size	Large	0.67 (0.48–0.92)	0.0149	0.77 (0.57–1.05)	0.0977
Registrar age		1.02 (1.00–1.04)	0.0420	1.01 (0.98–1.03)	0.4608
Patient age group	15-30	1.05 (0.82–1.34)	0.6965	1.01 (0.79–1.29)	0.9174
Referrent: 0-14	31-54	0.70 (0.57–0.87)	0.0009	0.67 (0.54–0.83)	0.0003
	55+	0.35 (0.26–0.46)	<0.0001	0.29 (0.22–0.38)	<0.0001
NESB	Yes	0.65 (0.42–1.01)	0.0547	0.54 (0.32–0.91)	0.0202
Associations of within consultation variables with patients' Aboriginal and Torres Strait Islander status (adjusted for the above registrar, patient and practice factors).					
Sought help from any source	Yes	1.18 (0.92–1.50)	0.1922	1.17 (0.92–1.48)	0.1924
Medication prescribed	Yes	1.23 (1.05–1.43)	0.0093	1.16 (0.98–1.37)	0.0897
Chronic problem	Yes	1.19 (1.01–1.41)	0.0382	1.17 (0.95–1.43)	0.1374
Consultation Duration		1.01 (1.00–1.02)	0.0981	1.01 (0.99–1.02)	0.2542
Number of problems		1.15 (1.03–1.29)	0.0146	1.20 (1.05–1.38)	0.0089
Associations of consultation outcome variables with patients' Aboriginal and Torres Strait Islander status (adjusted for the above registrar, patient, practice, and within consultation factors)					
Learning goals	Yes	1.43 (1.10–1.88)	0.0084	1.15 (0.90–1.48)	0.2621
Referral ordered	Yes	1.23 (1.01–1.50)	0.0437	1.20 (0.96–1.51)	0.1064
Follow up ordered	Yes	1.43 (1.19–1.72)	0.0002	1.30 (1.06–1.60)	0.0122

– continuity of care – showed a positive association. Aboriginal and Torres Strait Islander patients were more likely to have been seen by the registrar prior to the index consultation, and were more likely to have follow-up appointments organised. Continuity of care is a defining characteristic of general practice[20] and is of particular importance in Aboriginal and Torres Strait Islander health, where there are high levels of multimorbidity and chronic disease,[1] and particular issues of trust and suspicion of health providers.[21]

We found differences in the proportion of diagnoses/problems managed in Aboriginal and Torres Strait Islander patients. Compared to encounters with non-Aboriginal and Torres Strait Islander patients, psychological and social problems formed a greater proportion of problems managed in consultations with Aboriginal and Torres Strait Islander patients. These findings are in the context of the known epidemiology of disease in Aboriginal and Torres Strait Islander communities, with very high rates of mental health morbidity.[22]

Consultations involving cardiovascular problems were, as a proportion of all problems, less common in Aboriginal and Torres Strait Islander patients. The opposite might be have been hypothesised from the known epidemiology of CVD in Australia.[23] A consideration in the interpretation of this finding is that we have compared proportions of overall consultations involving individual ICPC-2 chapters (not rates of presentation), and health disparities for Aboriginal and Torres Strait Islander populations exist across multiple diseases. Even so, the lower proportion of consultations in the disease chapter in which most excess mortality occurs in Aboriginal and Torres Strait Islander populations[23] is still a cause for reflection and concern. Similar differences in the proportion of diagnoses/problems managed in Aboriginal and Torres Strait Islander patients have been found in established GPs.[24]

Strengths and limitations

Our study has a number of strengths. This is the first time the clinical encounters of Aboriginal and Torres Strait Islander patients with GP registrars have been described and one of very few studies describing primary care consultations with Aboriginal and Torres Strait Islander people. The registrar participants had similar demographics (age, gender and IMG status) to the national GP registrar cohort.[25] As well, we conducted this study in four regional training providers across four Australian states, making the findings broadly generalisable to Australian general practice training. Our participant response rate was 93.4%, which is singularly high for a study recruiting GPs.[26]

Additionally, we used a paper-based collection system. Due to the diverse variety of software packages in Australian general practices, efficient extraction of routinely collected electronic data is impracticable.[27] Furthermore, routinely recorded data in Australian general practice is likely to be of relatively poor quality compared to deliberately collected records.[28]

Furthermore, we coded our data using ICPC2-plus, thus enabling comparability with

other Australian studies. ICPC2-plus is the international standard for classifying primary care data and the validity of this system has previously been demonstrated.[28]

The study limitations include the possibility of under-ascertainment of Aboriginal and Torres Strait Islander status. While there are known barriers to recording of status in the clinical notes,[29] we instructed registrars to ask patients directly about their status.

Implications

Implications for policy

Knowledge of the frequency and nature of encounters by Aboriginal and Torres Strait Islander Australians in general practice is vital for a better understanding of the health needs of this population and planning health service provision. This includes training a culturally and clinically competent workforce. The RACGP and ACRRM Aboriginal and Torres Strait Islander curricula[6,7] describe the knowledge, skills and attitudes required by general practitioners to practice culturally safe, comprehensive, high quality care to their Aboriginal and Torres Strait Islander patients. Our findings have demonstrated a relative lack of clinical exposure to Aboriginal and Torres Strait Islander patients for GP registrars, and therefore a potential limitation in the opportunities for learning. The number of problems managed and complexity of health needs of this population is not reflected in an increase in either consultation duration or information seeking. This suggests an educational and training need. The strong associations of consultations with Aboriginal and Torres Strait Islander patients with rural and remote location and lower SES practice location also suggest that there may be considerable variability in registrars' exposure to Aboriginal and Torres Strait Islander health based on the location of their training practice. Registrars training in urban, relatively affluent areas may have particular deficits in exposure to Aboriginal and Torres Strait Islander health during training.

These findings should be used to inform educational and workforce policy in future general practice training. There has been a recommendation by Martin and Reath[30] to RTPs to develop innovative teaching approaches (e.g. vertically integrated training) to improve capacity and quality of general practice training in Aboriginal and Torres Strait Islander health. Such approaches must provide quality learning as well as appropriate care and continuity for patients. Our findings have reinforced this need.

Implications for further research

Particular aspects of registrar encounters with Aboriginal and Torres Strait Islander patients demand further analysis, including analysis of clinical case-mix, confidence in identification of Aboriginal and Torres Strait Islander patients and heterogeneity of individual registrars' exposure to Aboriginal and Torres Strait Islander health. Qualitative research could explore the discrepancy between higher number of problems managed, despite no increase in consultation duration.

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Supporting Information

Additional supporting information may be found in the online version of this article:

Supplementary Figure 1: ICPC-2 disease chapters for non-Aboriginal and Torres Strait Islander patients compared to those Aboriginal and Torres Strait Islander patients.

Supplementary Table 1: Problems Managed, by Disease Chapter, for Aboriginal and Torres Strait Islander compared with non-Aboriginal and Torres Strait Islander.